CLAIMS:

1.   A method of generating an object oriented interactive multimedia file, including:

encoding data comprising at least one of video, text, audio, music and/or graphics elements as a video packet stream, text packet stream, audio packet stream, music packet stream and/or graphics packet stream respectively;

combining said packet streams into a single self-contained object, said object containing its own control information;

placing a plurality of said objects in a data stream; and

grouping one or more of said data streams in a single contiguous self-contained scene, said scene including format definition as the initial packet in a sequence of packets.

2.   A method of generating an interactive multimedia file according to claim 1, including combining one or more of said scenes.

3.   A method of generating an interactive multimedia file according to claim 1 wherein a single scene contains an object library.

4.   A method of generating an interactive multimedia file according to claim 1 wherein data for configuring customisable decompression transforms is included within said objects.

5.   A method of generating an interactive object oriented multimedia file according to claim 1 wherein object control data is attached to objects which are interleaved into a video bit stream, and said object control data controls interaction behaviour, rendering parameters, composition, and interpretation of compressed data.

6.   A method of generating an interactive object oriented multimedia file according to claim 1 comprising a hierarchical directory structure wherein first level directory data comprising scene information is included with the first said scene, second level directory data comprising stream information is included with one or more of said scenes, and wherein third level directory data comprising information identifying the location of intra-frames is included in said data stream.

7.   A method of generating an object oriented interactive multimedia file, including:

encoding data comprising at least one of video and audio elements as a video packet stream and audio packet stream respectively;

combining said packet streams into a single self-contained object;

placing said object in a data stream;

placing said stream in a single contiguous self-contained scene, said scene including format definition; and

combining a plurality of said scenes.

8.   A method of generating an interactive object oriented multimedia file according to claim 1, wherein said object control data takes the form of messages encapsulated within object control packets and represents parameters for rendering video and graphics objects, for defining the interactive behaviour of said objects, for creating hyperlinks to and from said objects, for defining animation paths for said objects, for defining dynamic media composition parameters, for assigning values to user variables, for redirecting or retargeting the consequences of interactions with objects and other controls from one object to another, for attaching executable behaviours to objects, including voice calls and starting and stop timers, and for defining conditions for the execution of control actions.

9.   A method of generating an interactive object oriented multimedia file according to claim 7, wherein said rendering parameters represent object transparency, scale, volume, position, z-order, background colour and rotation, where said animation paths affect any of said rendering parameters, said hyperlinks support non-linear video and links to other video files, individual scenes within a file, and other object streams within a scene as targets, said interactive behaviour data includes the pausing of play and looping play, returning user information back to the server, activating or deactivating object animations, defining menus, and simple forms that can register user selections.

10.   A method of generating an interactive object oriented multimedia file according to claim 7, wherein conditional execution of rendering actions or object behaviours is provided and conditions take the form of timer events, user events, system events, interaction events, relationships between objects, user variables, and system status such as playing, pausing, streaming or stand-alone play.

11.   A method of mapping in real time from a non-stationary three-dimensional data set onto a single dimension, comprising the steps of:

pre-computing said data; encoding said mapping;

transmitting the encoded mapping to a client; and

said client applying said mapping to the said data.

12.   A method of mapping in real time from a non-stationary three-dimensional data set onto a single dimension according to claim 11, wherein said data set comprises a colour video frame and said pre-computing comprises a vector quantisation process;

determining the closest codebook vector for each cell in the mapping process;

performing said encoding using an octree representation;

sending said encoded octree to a decoder; and

said decoder then applying mapping to said data set.

13.   An interactive multimedia file format comprising single objects containing video, text, audio, music, and/or graphical data wherein at least one of said objects comprises a data stream, and at least one of said data streams comprises a scene, at least one of said scenes comprises a file, and wherein directory data and metadata provide file information.

14.   A system for dynamically changing the actual content of a displayed video in an object-oriented interactive video system comprising:

a dynamic media composition process including an interactive multimedia file format including objects containing video, text, audio, music, and/or graphical data wherein at least one of said objects comprises a data stream, at least one of said data streams comprises a scene, at least one of said scenes comprises a file;

a directory data structure for providing file information;

selecting mechanism for allowing the correct combination of objects to be composited together;

a data stream manager for using directory information and knowing the location of said objects based on said directory information; and

control mechanism for inserting, deleting, or replacing in real time while being viewed by a user, said objects in said scene and said scenes in said video.

15.   A system according to claim 14 including remote server non-sequential access capability, selection mechanism for selecting appropriate data components from each object stream, interleaving mechanism for placing said data components into a final composite data stream, and wireless transmission mechanism for sending said final composite stream to a client.

16.   A system according to claim 14 including remote server non-sequential access capability, including a mechanism for executing library management instructions delivered to said system from said remote server, said server capable of querying said library and receiving information about specific objects contained therein, and inserting, updating, or deleting the contents of said library; and said dynamic media composition engine capable of sourcing object data stream simultaneously both from said library and remote server if required.

17.   A system according to claim 14 including a local server providing offline play mode;

a storage mechanism for storing appropriate data components in local files;

selection mechanism for selecting appropriate data components from separate sources;

a local data file including multiple streams for each scene stored contiguously within said file;

access mechanism for said local server to randomly access each stream within a said scene;

selection mechanism for selecting said objects for rendering;

a persistent object library for use in dynamic media composition capable of being managed from said remote server, said objects capable of being stored in said library with full digital rights management information;

software available to a client for executing library management instructions delivered to it from said remote server, said server capable of querying said library and receiving information about specific objects contained therein, and inserting, updating, or deleting the contents of said library; and

said dynamic media composition engine capable of sourcing object data stream simultaneously both from said library and remote server.

18.   A system according to claim 14, wherein each said stream includes an end of stream packet for demarcating stream boundaries, said first stream in a said scene containing descriptions of said objects within said scene;

5   object control packets within said scene provide information for interactivity, changing the source data for a particular object to a different stream;

          reading mechanism in said server for reading more than one stream simultaneously from within a said file when performing local playback; and

          mechanism for managing an array or linked list of streams, data stream manager capable of reading one packet from each stream in a cyclical manner; storage mechanism for storing the current position in said file; and storage mechanism for storing a list of referencing objects.

19.   A system according to claim 14, wherein data is streamed to a media player client, said client capable of decoding packets received from the remote server and sending back user operations to said server, said server responding to user operations such as clicking, and modifying said data sent to said client, each said scene containing a single multiplexed stream composed of one or more objects, said server capable of composing scenes in real-time by multiplexing multiple object data streams based on client requests to construct a single multiplexed stream for any given scene, and wireless streaming to said client for playback.

20.   A system according to claim 14 including playing mechanism for playing a plurality of video objects simultaneously, each of said video objects capable of originating from a different source, said server capable of opening each of said sources, interleaving the bit streams, adding appropriate control information and forwarding the new composite stream to said client.

21. A system according to claim 14 including a data source manager capable of randomly accessing said source file, reading the correct data and control packets from said streams which are needed to compose the display scene, and including a server multiplexer capable of receiving input from multiple source manager instances with single

5 inputs and from said dynamic media composition engine, said multiplexer capable of multiplexing together object data packets from said sources and inserting additional control packets into said data stream for controlling the rendering of component objects in the composite scene.

10 22 A system according to claims 14 including an XML parser to enable programmable control of said dynamic media composition through IAVML scripting.

23. A system according to claims 14, wherein said remote server is capable of accepting a number of inputs from the server operator to further control and customize

15 said dynamic media composition process, said inputs including user profile, demographics, geographic location, or the time of day.

24. A system according to claims 14, wherein said remote server is capable of accepting a number of inputs from the server operator to further control and customize

20 said dynamic media composition process, said inputs including a log of user interaction such as knowledge of what advertisements have success with a user.

25. An object oriented interactive multimedia file, comprising:

a combination of one or more of contiguous self-contained scenes;

25 each said scene comprising scene format definition as the first packet, and a group of one or more data streams following said first packet;

each said data stream apart from first data stream containing objects which may be optionally decoded and displayed according to a dynamic media composition process as specified by object control information in said first data stream; and

each said data stream including one or more single self-contained objects and
5   demarcated by an end stream marker; said objects each containing it's own control information and formed by combining packet streams; said packet streams formed by encoding raw interactive multimedia data including at least one or a combination of video, text, audio, music, or graphics elements as a video packet stream, text packet stream, audio packet stream, music packet stream and graphics packet stream respectively.

10

26.   An object-oriented interactive video system including an interactive multimedia file format according to claim 25 including:

server software for performing said dynamic media composition process, said process allowing the actual content of a displayed video scene to be changed dynamically
15   in real-time while a user views said video scene, and for inserting, replacing, or adding any of said scene's arbitrary shaped visual/audio video objects; and

a control mechanism to replace in-picture objects by other objects to add or delete in-picture objects to or from a current scene to perform said process in a fixed, adaptive, or user-mediated mode.

20

27.   An object oriented interactive multimedia file according to claim 25 including data for configuring customisable decompression transforms within said scenes.

28.   An object-oriented interactive video system including an interactive multimedia
25   file format according to claim 25 including:

a control mechanism to provide a local object library to support said process, said library including a storage means for storing objects for use in said process, control mechanism to enable management of said library from a streaming server, control

- 164 -

mechanism for providing versioning control for said library objects, and for enabling automatic expiration of non persistent library objects; and

control mechanism for updating objects automatically from said server, for providing multilevel access control for said library objects, and for supporting a unique

5   identity, history and status for each of said library objects.

29.   An object-oriented interactive video system including an interactive multimedia file format according to claim 25 including:

a control mechanism for responding to a user click on a said object in a session by

10   immediately performing said dynamic media composition process; and

control mechanism for registering a user for offline follow-up actions, and for moving to a new hyperlink destination at the end of said session.

15   30.   A method of real-time streaming of file data in the object oriented file format according to claim 25, over a wireless network whereby a scene includes only one stream, and said dynamic media composition engine interleaves objects from other streams at an appropriate rate into the said first stream.

20   31.   A method of real-time streaming of file data in the object oriented file format according to claim 25, over a wireless network whereby a scene includes only one stream, and said dynamic media composition engine interleaves objects from other streams at an appropriate rate into the said first stream.

25   32.   A method according to claim 30 of streaming live video content to a user where said other streams include streams which are encoded in real time.

33. A method according to claim 31 of streaming live video content to a user comprising the following steps:

said user connecting to a remote server; and

said user selecting a camera location to view within a region handled by the

5 operator/exchange;

34. A method according to claim 31 of streaming live video content to a user comprising the following steps:

said user connects to a remote server; and

10 said user's geographic location, derived from a global positioning system or cell triangulation, is used to automatically provide a selection of camera locations to view for assistance with said user's selection of a destination .

35. A method according to claim 31 of streaming live traffic video content to a user

15 comprising the following steps:

said user registers for a special service where a service provider calls said user and automatically streams video showing a motorist's route that may have a potential problem area;

upon registering said user may elect to nominate a route for this purpose, and may

20 assist with determining said route; and

said system tracks said user's speed and location to determine the direction of travel and route being followed, said system could then search its list of monitored traffic cameras along potential routes to determine if any sites are problem areas, and if any problems exist, said system notifies said user and plays a video to present the traffic

25 information and situation.

36.   A method of advertising according to claim 26, wherein said dynamic media composition process selects objects based on a subscriber's own profile information, stored in a subscriber profile database.

5   37.   A method of providing a voice command operation of a low power device capable of operating in a streaming video system, comprising the following steps:

capturing a user's speech on said device;

compressing said speech;

inserting encoded samples of said compressed speech into user control packets;

10   sending said compressed speech to a server capable of processing voice commands;

said server performs automatic speech recognition;

said server maps the transcribed speech to a command set;

said system checks whether said command is generated by said user or said server;

15   if said transcribed command is from said server, said server executes said command;

if said transcribed command is from said user said system forwards said command to said user device; and

said user executes said command.

20

38.   A method of providing a voice command operation of a low power device capable of operating in a streaming video system, according to claim 37, wherein:

said system determines whether transcribed command is pre-defined;

if said transcribed command is not pre-defined, said system sends said transcribed
25   text string to said user; and

said user inserts said text string into an appropriate text field.

39.   An image processing method, comprising the step of:

generating a colour map based on colours of an image;

determining a representation of the image using the colour map; and

5   determining a relative motion of at least a section of the image which is represented using the colour map.

40.   A method according to claim 39, further comprising the step of encoding the representation of the image.

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41.   A method according to claim 39, further comprising the step of encoding the relative motion.

42.   A method according to claim 39, further comprising the step of encoding the 15 representation of the image and the relative motion.

43.   A method according to claim 39, wherein said generating step comprises performing a colour quantisation in order to generate the colour map.

20 44.   A method according to claim 43, wherein said generating step further comprises creating the colour map based on a previously determined colour map of a proximate frame.

45.   A method according to claim 44, wherein said creating step comprises reorganising the colour map based on the previously determined colour map so that colours of pixels 25 from the proximate frame which are carried over to a current frame are mapped to same indexes of the colour map.

46.   A method according to claim 44, wherein said creating step comprises correlating the colour map to the previously determined colour map.

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47. A method according to claim 39, wherein said step of determining a relative motion comprises determining a motion vector for the at least a section of the image.

48. An image processing method, comprising creating a quadtree for encoding a representation of an image.

49. A method according to claim 48, wherein the encoding step comprises creating the quadtree to have a transparent leaf representation.

50. A method according to claim 49, wherein the encoding step comprises creating the quadtree to have the transparent leaf representation which is utilized to represent arbitrary shaped objects.

51. A method according to claim 50, wherein the encoding step comprises creating the quadtree to have bottom level node type elimination.

52. A method of determining an encoded representation of an image comprising:
    analyzing a number of bits utilized to represent a colour;
    representing the colour utilizing a first flag value and a first predetermined number of bits, when the number of bits utilized to represent the colour exceeds a first value; and
    representing the colour utilizing a second flag value and a second predetermined number of bits, when the number of bits utilized to represent the colour does not exceed a first value.

53. A method according to claim 52, wherein the step of representing the colour utilizing the first flag value comprises representing the colour using the first predetermined number of bits which is eight; and
    the step of representing the colour utilizing the second flag value comprises representing the colour using the second predetermined number of bits which is four.

54.   An image processing system, comprising means for generating a colour map based on colours of an image;

means for determining a representation of the image using the colour map; and

means for determining a relative motion of at least a section of the image which is

5   represented using the colour map.

55.   A system according to claim 54, further comprising means for encoding the representation of the image.

10   56.   A system according to claim 54, further comprising means for encoding the relative motion.

57.   A system according to claim 54, further comprising means for encoding the representation of the image and the relative motion.

15

58.   A system according to claim 54, wherein said means for generating comprises means for performing a colour quantisation in order to generate the colour map.

59.   A system according to claim 58, wherein said means for generating further

20   comprises means for creating the colour map based on a previously determined colour map of a proximate frame.

60.   A system according to claim 59, wherein said means for creating comprises means for reorganizing the colour map based on the previously determined color map so that

25   colours of pixels from the proximate frame which are carried over to a current frame are mapped to same indexes of the colour map.

61.   A system according to claim 59, wherein said means for creating comprises means for correlating the colour map to the previously determined colour map.

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62.   A system according to claim 54, wherein said means for determining a relative motion comprises means for determining a motion vector for the at least a section of the image.

5   63.   An image encoding system comprising means for creating a quadtree for encoding a representation of an image.

64.   A system according to claim 63, wherein the means for encoding comprises means for creating the quadtree to have a transparent leaf representation.

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65.   A system according to claim 64, wherein the means for encoding comprises means for creating the quadtree to have the transparent leaf representation which is utilized to represent arbitrary shaped objects.

66.   A system according to claim 65, wherein the means for encoding comprises means for creating the quadtree to have bottom level node type elimination.

67.   An image encoding system for determining an encoded representation of an image comprising:

20   means for analyzing a number of bits utilized to represent a colour;

            means for representing the colour utilizing a first flag value and a first predetermined number of bits, when the number of bits utilized to represent the colour exceeds a first value; and

            means for representing the colour utilizing a second flag value and a second

25   predetermined number of bits, when the number of bits utilized to represent the colour does not exceed a first value.

68.   A system according to claim 67, wherein the means for representing the color utilizing the first flag value comprises representing the color using the first predetermined

30   number of bits which is eight; and

the step of representing the color utilizing the second flag value comprises representing the color using the second predetermined number of bits which is four.

69. A method of processing objects, comprising the steps of:

parsing information in a script language;

reading a plurality of data sources containing a plurality of objects in the form of at least one of video, graphics, animation, and audio;

attaching control information to the plurality of objects based on the information in the script language; and

interleaving the plurality of objects into at least one of a data stream and a file.

70. A method according to claim 69, further comprising the step of inputting information from a user, wherein the step of attaching is performed based on the information in the script language and the information from the user.

71. A method according to claim 69, further comprising the step of inputting control information selected from at least one of profile information, demographic information, geographic information, and temporal information, wherein the step of attaching is performed based on the information in the script language and the control information.

72. A method according to claim 71, further comprising the step of inputting information from a user, wherein the step of attaching is performed based on the information in the script language, the control information, and the information from the user.

73. A method according to claim 72, wherein the step of inputting information from the user comprises graphically pointing and selecting an object on a display.

74. A method according to claim 69, further comprising the steps of inserting an object into the at least one of the data stream and file.

75. A method according to claim 74, wherein said inserting step comprises inserting an advertisement into the at least one of the data stream and file.

76. A method according to claim 75, further comprising the step of replacing the
5 advertisement with a different object.

77. A method according to claim 74, wherein said inserting step comprises inserting a graphical character into the at least one of the data stream and file.

10 78. A method according to claim 77, wherein said step of inserting a graphical character comprises inserting the graphical character based on a geographical location of a user.

79. A method according to claim 69, further comprising the step of replacing one of
15 the plurality of objects with another object.

80. A method according to claim 79, wherein said step of replacing one of the plurality of objects comprises replacing the one of the plurality of objects which is a viewed scene with a new scene.

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81. A method according to claim 69, wherein said step of reading a plurality of data sources comprises reading a least one of the plurality of data sources which is training video.

25 82. A method according to claim 69, wherein said step of reading a plurality of data sources comprises reading a least one of the plurality of data sources which is an educational video.

83. A method according to claim 69, wherein said step of reading a plurality of data
30 sources comprises reading a least one of the plurality of data sources which is a promotional video.

- 173 -

84. A method according to claim 69, wherein said step of reading a plurality of data sources comprises reading a least one of the plurality of data sources which is an entertainment video.

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85. A method according to claim 69, wherein said step of reading a plurality of data sources comprises obtaining video from a surveillance camera.

86. A method according to claim 74, wherein said inserting step comprises inserting a video from a camera for viewing automobile traffic into the at least one of the data stream and file.

87. A method according to claim 74, wherein said inserting step comprises inserting information of a greeting card into the at least one of the data stream and file.

88. A method according to claim 74, wherein said inserting step comprises inserting a computer generated image of a monitor of a remote computing device.

89. A method according to claim 69, further comprising the step of providing the at least one of a data stream and a file to a user, wherein the at least one of a data stream and a file include an interactive video brochure.

90. A method according to claim 69, further comprising the step of providing the at least one of a data stream and a file which includes an interactive form to a user;
    electronically filling out the form by the user; and
    electronically storing information entered by the user when filling out the form.

91. A method according to claim 90, further comprising the step of transmitting the information which has been electronically stored.

- 174 -

92. A method according to claim 69, wherein the step of attaching control information comprises attaching control information which indicates interaction behaviour.

93. A method according to claim 69, wherein the step of attaching control information

5 comprises attaching control information which includes rendering parameters.

94. A method according to claim 69, wherein the step of attaching control information comprises attaching control information which includes composition information.

10 95. A method according to claim 69, wherein the step of attaching control information comprises attaching control information which indicates how to process compressed data.

96. A method according to claim 69, wherein the step of attaching control information comprises attaching an executable behaviour.

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97. A method according to claim 96, wherein the step of attaching an executable behaviour comprises attaching rendering parameters used for animation.

98. A method according to claim 96, wherein the step of attaching an executable

20 behaviour comprises attaching a hyperlink.

99. A method according to claim 96, wherein the step of attaching an executable behaviour comprises attaching a timer.

25 100. A method according to claim 96, wherein the step of attaching an executable behaviour comprises attaching a behaviour which allows making a voice call.

101. A method according to claim 96, wherein the step of attaching an executable behaviour comprises attaching systems states including at least one of pause and play.

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102.   A method according to claim 96, wherein the step of attaching an executable behaviour comprises attaching information which allows changing of user variables.

103.   A system for processing objects, comprising:

     means for parsing information in a script language;

     means for reading a plurality of data sources containing a plurality of objects in the form of at least one of video, graphics, animation, and audio;

     means for attaching control information to the plurality of objects based on the information in the script language; and

     means for interleaving the plurality of objects into at least one of a data stream and a file.

104.   A system according to claim 103, further comprising means for inputting information from a user, wherein the means for attaching operates based on the information in the script language and the information from the user.

105.   A system according to claim 103, further comprising means for inputting control information selected from at least one of profile information, demographic information, geographic information, and temporal information, wherein the means for attaching operates based on the information in the script language and the control information.

106.   A system according to claim 105, further comprising means for inputting information from a user, wherein the means for attaching operates based on the information in the script language, the control information, and the information from the user.

107.   A system according to claim 106, wherein the means for inputting information from the user comprises means for graphically pointing and selecting an object on a display.

- 176 -

108. A system according to claim 103, further comprising means for inserting an object into the at least one of the data stream and file.

109. A system according to claim 108, wherein said means for inserting comprises
5 means for inserting an advertisement into the at least one of the data stream and file.

110. A system according to claim 109, further comprising means for replacing the advertisement with a different object.

10 111. A system according to claim 108, wherein said means for inserting comprises means for inserting a graphical character into the at least one of the data stream and file.

112. A system according to claim 111, wherein said means for inserting a graphical character comprises means for inserting the graphical character based on a geographical
15 location of a user.

113. A system according to claim 103, further comprising means for replacing one of the plurality of objects with another object.

20 114. A system according to claim 113, wherein said means for replacing one of the plurality of objects comprises means for replacing the one of the plurality of objects which is a viewed scene with a new scene.

115. A system according to claim 103, wherein said means for reading a plurality of
25 data sources comprises means for reading a least one of the plurality of data sources which is a training video.

116. A system according to claim 103, wherein said means for reading a plurality of data sources comprises means for reading a least one of the plurality of data sources which
30 is a promotional video.

117.   A system according to claim 103, wherein said means for reading a plurality of data sources comprises means for reading a least one of the plurality of data sources which is an entertainment video.

5   118.   A system according to claim 103, wherein means for reading a plurality of data sources comprises means for reading a least one of the plurality of data sources which is an educational video.

119.   A system according to claim 103, wherein said means for reading a plurality of 10   data sources comprises means for obtaining video from a surveillance camera.

120.   A system according to claim 107, wherein said means for inserting comprises means for inserting a video from a camera for viewing automobile traffic into the at least one of the data stream and file.

15   121.   A system according to claim 107, wherein said means for inserting comprises means for inserting information of a greeting card into the at least one of the data stream and file.

20   122.   A system according to claim 107, wherein said means for inserting comprises inserting a computer generated image of a monitor of a remote computing device.

123.   A system according to claim 103, further comprising means for providing the at least one of a data stream and a file to a user, wherein the at least one of a data stream and 25   a file includes an interactive video brochure.

124.   A system according to claim 103, further comprising means for providing the at least one of a data stream and a file which includes an interactive form to a user;
        means for electronically filling out the form by the user; and
30   means for electronically storing information entered by the user when filling out the form.

125. A system according to claim 124, further comprising means for transmitting the information which has been electronically stored.

5   126. A system according to claim 103, wherein the means for attaching control information comprises means for attaching control information which indicates interaction behaviour.

127. A system according to claim 103, wherein the means for attaching control
10   information comprises means for attaching control information which includes rendering parameters.

128. A system according to claim 103, wherein the means for attaching control information comprises means for attaching control information which includes
15   composition information.

129. A system according to claim 103, wherein the means for attaching control information comprises means for attaching control information which indicates how to process compressed data.
20

130. A system according to claim 103, wherein the means for attaching control information comprises means for attaching an executable behaviour.

131. A system according to claim 130, wherein the means for attaching an executable
25   behaviour comprises means for attaching rendering parameters used for animation.

132. A system according to claim 130, wherein the means for attaching an executable behaviour comprises means for attaching a hyperlink.

30   133. A system according to claim 130, wherein the means for attaching an executable behaviour comprises means for attaching a timer.

134.   A system according to claim 130, wherein the means for attaching an executable behaviour comprises means for attaching a behaviour which allows making a voice call.

5   135.   A system according to claim 130, wherein the means for attaching an executable behaviour comprises means for attaching systems states including at least one of pause and play.

136.   A system according to claim 130, wherein the means for attaching an executable 10   behaviour comprises means for attaching information which allows changing of user variables.

137.   A method of remotely controlling a computer, comprising the step of:

 performing a computing operation at a server based on data;

15   generating image information at the server based on the computing operation;

 transmitting, via a wireless connection, the image information from the server to a client computing device without transmitting said data;

 receiving the image information by the client computing device; and

 displaying the image information by the client computing device.

20

138.   A method according to claim 137, further comprising the steps of entering, by a user of the client computing device, input information;

 transmitting, via the wireless connection, the input information from the client computing device to the server;

25   processing the input information at the server;

 altering the image information at the server based on the input information;

 transmitting, via the wireless connection, the image information which has been altered;

 receiving the image information which has been altered by the client computing 30   device; and

displaying the image information which has been altered by the client computing device.

139.   A method according to claim 137, further comprising the step of capturing the
5   image information at the server, wherein the transmitting step comprises transmitting the image information which has been captured.

140.   A method according to claim 137, wherein the transmitting step comprises transmitting the image information as a video object having attached thereto control
10   information.

141.   A system for remotely controlling a computer, comprising:

        means for performing a computing operation at a server based on data;

        means for generating image information at the server based on the computing
15   operation;

        means for transmitting, via a wireless connection, the image information from the server to a client computing device without transmitting said data;

        means for receiving the image information by the client computing device; and

        means for displaying the image information by the client computing device.

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142.   A system according to claim 141, further comprising means for entering, by a user of the client computing device, input information;

        means for transmitting, via the wireless connection, the input information from the client computing device to the server;

25   means for processing the input information at the server;

        means for altering the image information at the server based on the input information;

        means for transmitting, via the wireless connection, the image information which has been altered;

30   means for receiving the image information which has been altered by the client computing device; and

means for displaying the image information which has been altered by the client computing device.

143.   A system according to claim 141, further comprising means for capturing the

5   image information at the server,

wherein the means for transmitting comprises:

means for transmitting the image information which has been captured.

144.   A system according to claim 139, wherein the means for transmitting comprises

10   means for transmitting the image information as a video object having attached thereto

control information.

145.   A method of transmitting an electronic greeting card, comprising the steps of:

inputting information indicating features of a greeting card;

generating image information corresponding to the greeting card;

15   encoding the image information as an object having control information;

transmitting the object having the control information over a wireless connection;

receiving the object having the control information by a wireless hand-held

computing device;

20   decoding the object having the control information into a greeting card image by

the wireless hand-held computing device; and

displaying the greeting card image which has been decoded on the hand-held

computing device.

25   146.   A method according to claim 145, wherein the step of generating image

information comprises capturing at least one of an image and as series of images as

custom image information, wherein the encoding step further comprises encoding said

custom image as an object having control information, wherein said step of decoding

comprises decoding the object encoded using the image information and decoding the

30   object encoded using the custom image information, wherein said displaying step

comprises displaying image information and the custom image information as the greeting card.

147.　　A system transmitting an electronic greeting card, comprising:

5　　　　　means for inputting information indicating features of a greeting card;

　　　　　means for generating image information corresponding to the greeting card;

　　　　　means for encoding the image information as an object having control information;

　　　　　means for transmitting the object having the control information over a wireless connection;

10　　　　means for receiving the object having the control information by a wireless hand-held computing device;

　　　　　means for decoding the object having the control information into a greeting card image by the wireless hand-held computing device; and

　　　　　means for displaying the greeting card image which has been decoded on the hand-15　held computing device.

148.　　A system according to claim 147, wherein the means for generating image information comprises means for capturing at least one of an image and as series of images as custom image information, wherein the means for encoding further comprises 20　means for encoding said custom image as an object having control information, wherein said means for decoding comprises means for decoding the object encoded using the image information and decoding the object encoded using the custom image information, wherein said means for displaying comprises means for displaying image information and the custom image information as the greeting card.

25

149.　　A method of controlling a computing device, comprising the steps of:

　　　　　inputting an audio signal by a computing device;

　　　　　encoding the audio signal;

　　　　　transmitting the audio signal to a remote computing device;

30　　　　interpreting the audio signal at the remote computing device and generating information corresponding to the audio signal;

transmitting the information corresponding to the audio signal to the computing device;

controlling the computing device using the information corresponding to the audio signal.

5

150.   A method according to claim 149, wherein said controlling step comprises controlling the computing device using computer instructions which corresponds to the information corresponding to the audio signal.

10   151.   A method according to claim 149, wherein said controlling step comprises controlling the computing device using data which corresponds to the information corresponding to the audio signal.

152.   A method according to claim 149, wherein the step of interpreting the audio signal
15   comprises performing a speech recognition.

153.   A system for controlling a computing device, comprising:

inputting an audio signal by a computing device;

encoding the audio signal;

20   transmitting the audio signal to a remote computing device;

interpreting the audio signal at the remote computing device and generating information corresponding to the audio signal;

transmitting the information corresponding to the audio signal to the computing device; and

25   controlling the computing device using the information corresponding to the audio signal.

154.   A system according to claim 153, wherein said means for controlling comprises means for controlling the computing device using computer instructions which
30   corresponds to the information corresponding to the audio signal.

155. A system according to claim 153, wherein said means for controlling comprises means for controlling the computing device using data which corresponds to the information corresponding to the audio signal.

5   156. A system according to claim 153, wherein said means for interpreting the audio signal comprises means for performing a speech recognition.

157. A method of performing a transmission, comprising the steps of:

    displaying an advertisement on a wireless hand-held device;

10   transmitting information from the wireless hand-held device; and

    receiving a discounted price associated with the information which has been transmitted because of the display of the advertisement.

158. A method according to claim 157, wherein the displaying step is performed before

15 the transmitting step.

159. A method according to claim 157, wherein the displaying step is performed during the transmitting step.

20 160. A method according to claim 157, wherein the displaying step is performed after the transmitting step.

161. A method according to claim 157, wherein the step of receiving a discounted price comprises receiving a discount of an entire cost associated with the information which has

25 been transmitted.

162. A method according to claim 157, wherein the step of displaying comprises displaying the object as an interactive object, the method further comprising interacting with the object by the user; and displaying a video in response to interacting by the user.

30

163. A system for performing a transmission, comprising:

means for displaying an advertisement on a wireless hand-held device;

means for transmitting information from the wireless hand-held device; and

means for receiving a discounted price associated with the information which has been transmitted because of the display of the advertisement.

5

164. A system according to claim 163, wherein the means for displaying the advertisement operates before the transmitting of information.

165. A system according to claim 163, wherein the means for displaying the
10 advertisement operates during the transmitting of information. _

166. A system according to claim 163, wherein the means for displaying the advertisement operates after the transmitting of information.

15 167. A system according to claim 163, wherein the means for receiving a discounted price comprises means for receiving a discount of an entire cost associated with the information which has been transmitted.

168. A system according to claim 163, wherein the means for displaying comprises
20 means for displaying the object as an interactive object, the system further comprising means for interacting with the object by the user; and means for displaying a video in response to interacting by the user.

169. A method of providing video, comprising the steps of:
25 determining whether an event has occurred; and

obtaining a video of an area transmitting to a user by a wireless transmission the video of the area in response to the event.

170. A method according to claim 169, wherein the step of determining comprises
30 selecting a location by the user, wherein the step of transmitting comprises transmitting the video of the area which corresponds to said location.

- 186 -

171.   A method according to claim 170, wherein the step of selecting comprises dialing a phone number corresponding to traffic video.

5   172.   A method according to claim 169, further comprising the step of performing a determination of the area using a global position system.

173.   A method according to claim 169, further comprising the step of performing a determination of the area based on a cell site utilized by the user.

10

174.   A method according to claim 169, wherein the step of determining comprises determining that a traffic problem exists on a predefined route, wherein the step of obtaining video comprises obtaining video which corresponds to the predefined route.

15   175.   A method according to claim 174, wherein the step of transmitting comprises transmitting the video to the user only when the user is moving greater than a predetermined speed.

176.   A system for providing video, comprising:

20   means for determining whether an event has occurred;

means for obtaining a video of an area; and

means for transmitting to a user by a wireless transmission the video of the area in response to the event.

25   177.   A system according to claim 176, wherein the means for determining comprises means for selecting a location by the user, wherein the means for transmitting comprises means for transmitting the video of the area which corresponds to said location.

178.   A system according to claim 177, wherein the means for selecting comprises

30   means for dialing a phone number corresponding to traffic video.

179.   A system according to claim 176, further comprising means for performing a determination of the area using a global position system.

180.   A system according to claim 176, further comprising means for performing a determination of the area based on a cell site utilized by the user.

181.   A system according to claim 176, wherein the means for determining comprises means for determining that a traffic problem exists on a predefined route, wherein the means for obtaining video comprises means for obtaining video which corresponds to the predefined route.

182.   A system according to claim 181, wherein the means for transmitting comprises means for transmitting the video to the user only when the user is moving greater than a predetermined speed.

183.   An object oriented multimedia video system capable of supporting multiple arbitrary shaped video objects without the need for extra data overhead or processing overhead to provide video object shape information.

184.   A system according to claim 183, wherein said video objects have their own attached control information.

185.   A system according to claim 183, wherein said video objects are streamed from a remote server to a client.

186.   A system according to claim 183, wherein said video object shape is intrinsically encoded in the representation of the images.

187.   A method according to claim 69, wherein the step of attaching control information comprises attaching conditions for execution of controls.

188. A method according to claim 71 further comprising the steps of obtaining information from user flags or variables, wherein the step of attaching is performed based on the information in the script language, the control information, and the information from said user flags.

5

189. A method of delivering multimedia content to wireless devices by server initiated communications wherein content is scheduled for delivery at a desired time or cost effective manner and said user is alerted to completion of delivery via device's display or other indicator.

10

190. A method according to claim 189, wherein said user registers a request for delivery of specific content with a content service provider, said request being used to automatically schedule network initiated delivery to the client device.

15   191. An interactive system wherein stored information can be viewed offline and stores user input and interaction to be automatically forwarded over a wireless network to a specified remote server when said device next connects online.

192. An interactive system according to claim 191, wherein said stored information is
20   object oriented multimedia data which can be navigated non-linearly.

193. A method according to claim 69, wherein said step of reading a plurality of data sources comprises reading a least one of the plurality of data sources which take the form of marketing, promotional, product information, entertainment videos videos.

25

194. A method according to claim 51, wherein the encoding step comprises creating the quadtree to have leaf node values represented as an index into a FIFO buffer if a flag is defined true or as the colour value if said the flag is false.

195.   A system according to claim 66, wherein the means for encoding comprises means for creating the quadtree to have leaf node values represented as an index into a FIFO buffer if a flag is defined true or as the colour value if said the flag is false.

5   196.   A method according to claim 51, wherein the encoding step comprises creating the quadtree to have leaf node values represented as the mean plus horizontal and vertical gradients.

197.   A method according to claim 196, wherein the encoding step comprises creating

10   the quadtree to have leaf node mean values represented as an index into a FIFO buffer if a flag is defined true or as the colour value if said the flag is false.

198.   A system according to claim 66, wherein the means for encoding comprises creating the quadtree to have leaf node values represented as the mean plus horizontal and

15   vertical gradients.

199.   A system according to claim 198, wherein the means for encoding comprises creating the quadtree to have leaf node mean values represented as an index into a FIFO buffer if a flag is defined true or as the colour value if said the flag is false.

20

200.   A system according to claim 14 including a persistent object library on a portable client device for use in dynamic media composition said library being capable of being managed from said remote server, software available to a client for executing library management instructions delivered to it from said remote server, said server capable of

25   querying said library and receiving information about specific objects contained therein, and inserting, updating, or deleting the contents of said library; and said dynamic media composition engine capable of sourcing object data stream simultaneously both from said library and remote server, if required, said persistent object library storing object information including expiry dates, access permissions, unique identifiers, metadata and

30   state information, said system performing automatic garbage collection on expired objects, access control, library searching, and various other library management tasks.

201.   A video encoding method, including:

encoding video data with object control data as a video object; and

generating a data stream including a plurality of said video object with respective

5   video data and object control data.

202.   A video encoding method as claimed in claim 201, including:

generating a scene packet representative of a scene and including a plurality of said

data stream with respective video objects.

10

203.   A video encoding method as claimed in claim 202, including generating a video

data file including a plurality of said scene packet with respective data streams and user

control data.

15   204.   A video encoding method as claimed in claim 201, wherein said video data

represents video frames, audio frames, text and/or graphics.

205.   A video encoding method as claimed in claim 201, wherein said video object

comprises a packet with data packets of said encoded video data and at least one object

20   control packet with said object control data for said video object.

206.   A video encoding method as claimed in claim 202, wherein said video data file,

said scene packets and said data streams include respective directory data.

25   207.   A video encoding method as claimed in claim 201, wherein said object control data

represents parameters defining said video object to allow interactive control of said object

within a scene by a user.

208.   A video encoding method as claimed in claim 201, wherein said encoding includes

30   encoding luminance and colour information of said video data with shape data

representing the shape of said video object.

209.   A video encoding method as claimed in claim 201, wherein said object control data defines shape, rendering, animation and interaction parameters for said video objects.

5   210.   A video encoding method, including:

quantising colour data in a video stream based on a reduced representation of colours;

generating encoded video frame data representing said quantised colours and transparent regions; and

10   generating encoded audio data and object control data for transmission with said encoded video data.

211.   A video encoding method as claimed in claim 210, including:

generating motion vectors representing colour changes in a video frame of said
15   stream; said encoded video frame data representing said motion vectors.

212.   A video encoding method as claimed in claim 211, including:

generating encoded text object and vector graphic object and music object data for transmission with said encoded video data; and

20   generating   encoded   data   for   configuring   customisable   decompression transformations.

213.   A video encoding method as claimed in claim 2, including dynamically generating said scene packets for a user in real-time based on user interaction with said video objects.

25

214.   A video encoding method as claimed in claim 1, wherein said object control data represents parameters for (i) rendering video objects, for (ii) defining the interactive behaviour of said objects, for (iii) creating hyperlinks to and from said objects, for (iv) defining animation paths for said objects, for (v) defining dynamic media composition
30   parameters, for (vi) assigning of values to user variables and/or for (vii) defining conditions for execution of control actions.

215.   A video encoding method as claimed in claim 210 or 211, wherein said object control data represents parameters for rendering objects of a video frame.

5   216.   A video encoding method as claimed in claim 210 or 211, wherein said parameters represents transparency, scale, volume, position, and rotation.

217.   A video encoding method as claimed in claim 210 or 211, wherein said encoded video, audio and control data are transmitted as respective packets for respective decoding.

10   218.   A video encoding method, including:

(i)   selecting a reduced set of colours for each video frame of video data;

(ii)   reconciling colours from frame to frame;

(iii)   executing motion compensation;

15   (iv)   determining update areas of a frame based on a perceptual colour difference measure;

(v)   encoding video data for said frames into video objects based on steps (i) to (iv); and

(vi)   including in each video object animation, rendering and dynamic

20   composition controls.

219.   A video decoding method for decoding video data encoded according to a method as claimed in any one of the preceding claims.

25   220.   A video decoding method as claimed in claim 219, including parsing said encoded data to distribute object control packets to an object management process and encoded video packets to a video decoder.

221.   A video encoding method as claimed in claim 214, wherein said rendering

30   parameters represent object transparency, scale, volume, position and rotation.

222. A video encoding method as claimed in claim 214, wherein said animation paths adjust said rendering parameters.

223. A video encoding method as claimed in claim 214, wherein said hyperlinks

5   represent links to respective video files, scene packets and objects.

224. A video encoding method as claimed in claim 214, wherein said interactive behaviour data provides controls for play of said objects, and return of user data.

10   225. A video decoding method as claimed in claim 220 including generating video object controls for a user based on said object control packets for received and rendered video objects.

226. A video decoder having components for executing the steps of the video decoding

15   method as claimed in claim 219.

227. A computer device having a video decoder as claimed in claim 226.

228. A computer device as claimed in claim 227, wherein said device is portable and

20   handheld, such as a mobile phone or PDA.

229. A dynamic colour space encoding method including executing the video encoding method as claimed in claim 1 and adding additional colour quantisation information for transmission to a user to enable said user to select a real-time colour reduction.

25

230. A video encoding method as claimed in claim 201, including adding targeted user and/or local video advertising with said video object.

231. A computer device having an ultrathin client for executing the video decoding

30   method as claimed in claim 219 and adapted to access a remote server including said video objects.

- 194 -

232.   A method of multivideo conferencing including executing the video encoding method as claimed in claim 201.

5   233.   A video encoding method as claimed in claim 201, including generating video menus and forms for user selections for inclusion in said video objects.

234.   A method of generating electronic cards for transmission to mobile phones including executing said video encoding method as claimed in claim 201.

10

235.   A video encoder having components for executing the steps of the video encoding method as claimed in any one of claims 201 to 218.

236.   A video on demand system including a video encoder as claimed in claim 235.

15

237.   A video security system including a video encoder as claimed in claim 235.

238.   An interactive mobile video system including a video decoder as claimed in claim 226.

20

239.   A video decoding method as claimed in 219 including processing voice commands from a user to control a video display generated on the basis of said video objects.

240.   A computer program stored on a computer readable storage medium including 25   code for executing a video decoding method as claimed in claim 219 and generating a video display including controls for said video objects, and adjusting said display in response to application of said controls.

241.   A computer program as claimed in claim 240 including IAVML instructions.

30

242.   A wireless streaming video and animation system, including:

    (i)   a portable monitor device and first wireless communication means;

    (ii)   a server for storing compressed digital video and computer animations and enabling a user to browse and select digital video to view from a library of available videos; and

    (iii)   at least one interface module incorporating a second wireless communication means for transmission of transmittable data from the server to the portable monitor device, the portable monitor device including means for receiving said transmittable data, converting the transmittable data to video images displaying the video images, and permitting the user to communicate with the server to interactively browse and select a video to view.

243.   A wireless streaming video and animation system as claimed in claim 242, wherein said portable wireless device is a hand held processing device.

244.   A method of providing wireless streaming of video and animation including at least one of the steps of:

    (a)   downloading and storing compressed video and animation data from a remote server over a wide area network for later transmission from a local server;

    (b)   permitting a user to browse and select digital video data to view from a library of video data stored on the local server;

    (c)   transmitting the data to a portable monitor device; and

    (d)   processing the data to display the image on the portable monitor device.

245.   A method of providing an interactive video brochure including at least one of the steps of:

    (a)   creating a video brochure by specifying (i) the various scenes in the brochure and the various video objects that may occur within each scene, (ii) specifying the preset and user selectable scene navigational controls and

the individual composition rules for each scene, (iii) specifying rendering parameters on media objects, (iv) specifying controls on media objects to create forms to collect user feedback, (v) integrating the compressed media streams and object control information into a composite data stream.

246. A method as claimed in claim 245, including:

(a) processing the composite data stream and interpreting the object control information to display each scene;

(b) processing user input to execute any relevant object controls, such as navigation through the brochure, activating animations etc, registering and user selections and other user input;

(c) storing the user selections and user input for later uploading to the provider of the video brochures network server when a network connection becomes available; and

(d) at a remote network server, receiving uploads of user selections from interactive video brochures and processing the information to integrate it into a customer/client database.

247. A method of creating and sending video greeting cards to mobile devices including at least one of the steps of:

(a) permitting a customer to create the video greeting card by (i) selecting a template video scene or animation form a library, (ii) customising the template by adding user supplied text or audio objects or selecting video objects from a library to be inserted as actors in the scene;

(b) obtaining from the customer (i) identification details, (ii) preferred delivery method, (iii) payment details, (iv) the intended recipient's mobile device number; and

(c) queuing the greeting card depending on the nominated delivery method until either bandwidth becomes available or off peak transport can be obtained, polling the recipient's device to see if it is capable of processing the greeting card and if so forwarding to the nominated mobile device.

248.   A video encoding method as claimed in claim 201, wherein said object control data includes shape parameters that allow a user to render arbitrary shape video corresponding to said video object.

249.   A video encoding method as claimed in claim 201, wherein said object control data includes condition data determining when to invoke corresponding controls for said video object.

250.   A video encoding method as claimed in claim 201, wherein said object control data represents controls for affecting another video object.

251.   A video encoding method as claimed in claim 201, including controlling dynamic media composition of said video objects on the basis of flags set in response to events or user interactions.

252.   A video encoding method as claimed in claim 201, including broadcasting and/or ~~multicasting said data streams.~~